DOCUMENT RESUME

ED 423 329 UD 032 529

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TITLE	Implementing a Highly Specified Curricular, Instructional, and Organizational School Design in a High-Poverty Urban Elementary School: Three Year Results. Report No. 20.
INSTITUTION	Center for Research on the Education of Students Placed At Risk, Baltimore, MD.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.; Abell Foundation, Baltimore, MD.
PUB DATE	1998-07-00
NOTE	29p.
CONTRACT	R-117-D40005
PUB TYPE	Reports - Evaluative (142)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Academic Achievement; *Achievement Gains; Disadvantaged Youth; *Educational Change; Elementary Education; *Elementary Schools; Outcomes of Education; *Private Schools; Program Implementation; Public Schools; *School Restructuring; Tables (Data); Teacher Expectations of Students; *Urban Schools; Urban Youth
IDENTIFIERS	*Baltimore City Public Schools MD

ABSTRACT

This report provides background, implementation, and diverse outcome data from the first 3 years of an ongoing effort to implement a highly specified school reform design in a high-poverty, urban elementary school, Woodson Elementary School, Baltimore (Maryland). The design that is being implemented is the Calvert School model. The Calvert School is a private elementary school with a long history of providing a high-quality education to many of Baltimore's most affluent families. Many children worldwide are home-schooled using Calvert's highly structured home instruction program. High expectations, time-on-task, rapid pace of instruction, frequent evaluations, immediate feedback, and student accuracy are viewed as fundamental in the Calvert model. In a method that predated portfolio instruction by over half a century, Calvert produces a "book" of each student's school folder for each month of the school year. The Calvert model had already been implemented at one Baltimore school with a great deal of success when the program was implemented at Woodson. The Woodson Elementary School is located in a predominantly African American community in Baltimore's central city. Over 90% of students are eligible for free or reduced-price lunch. Third-year implementation was largely, although not totally, successful. Outcome data indicate that the Calvert program has had a positive academic impact on students attending Woodson Elementary School. The quality of work in students' folders has been high, and student attendance has averaged 96.4%. Referral rates to special education remain low, and end-of-third-grade Comprehensive Testing Program scores have been dramatically above those of previous Woodson students. Scores on the Maryland School Performance Assessment Program have also improved. (Contains 13 tables and 22 references.) (SLD)

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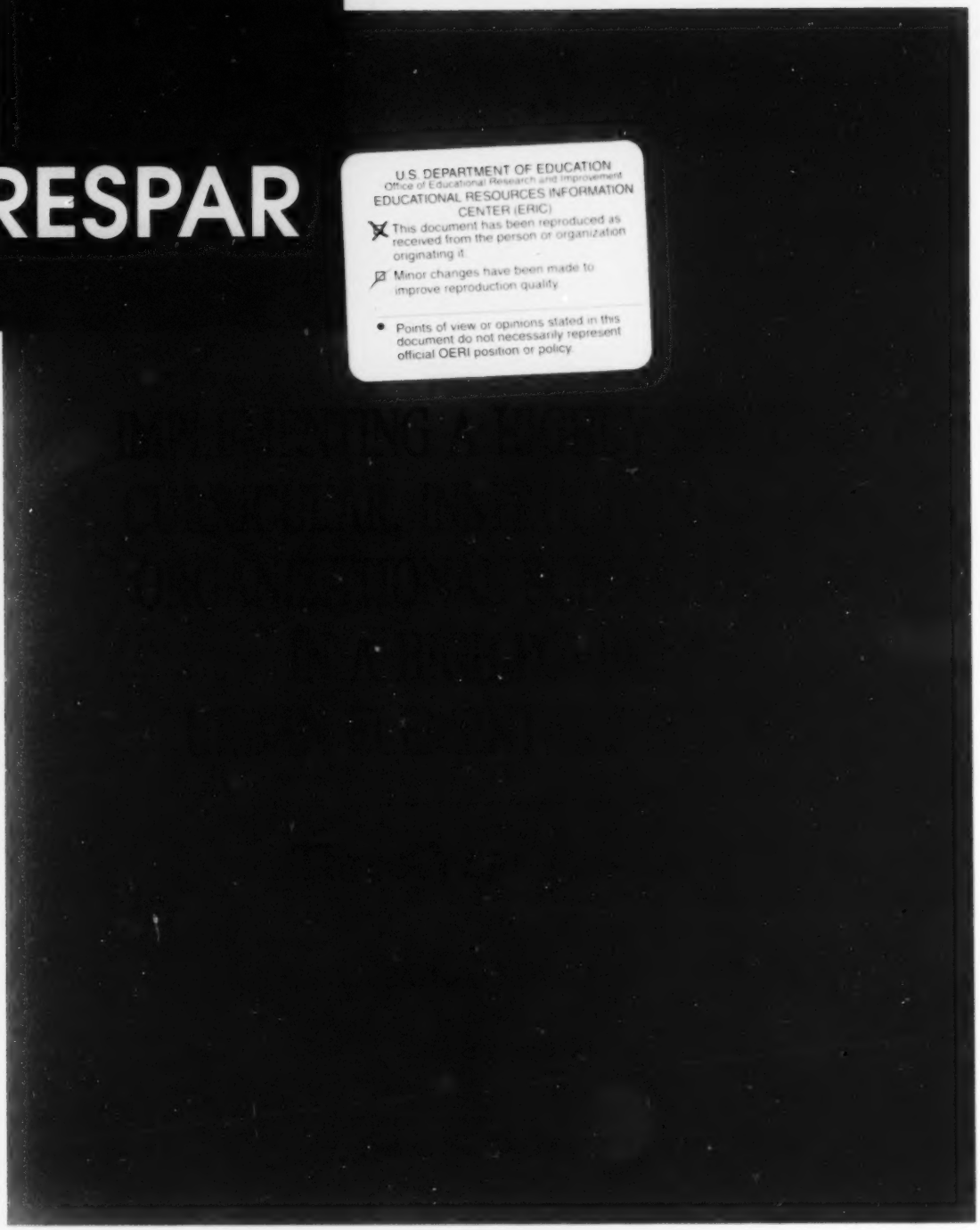

CENTER FOR RESEARCH ON THE EDUCATION OF STUDENTS PLACED AT RISK

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IMPLEMENTING A HIGHLY SPECIFIED CURRICULAR, INSTRUCTIONAL, AND ORGANIZATIONAL SCHOOL DESIGN IN A HIGH-POVERTY, URBAN ELEMENTARY SCHOOL

Three-Year Results

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and

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Report No. 20

July 1998

Published by the Center for Research on the Education of Students Placed At Risk (CRESPAR), supported as a national research and development center by funds from the Office of Educational Research and Improvement, U.S. Department of Education (R-117-D40005). The conduct of much of the research reported in this report was supported by the Abell Foundation of Baltimore, Maryland. The opinions expressed in this publication do not necessarily reflect the position or policy of OERI, and no official endorsement should be inferred.

The Center

Every child has the capacity to succeed in school and in life. Yet far too many children, especially those from poor and minority families, are placed at risk by school practices that are based on a sorting paradigm in which some students receive high-expectations instruction while the rest are relegated to lower quality education and lower quality futures. The sorting perspective must be replaced by a "talent development" model that asserts that all children are capable of succeeding in a rich and demanding curriculum with appropriate assistance and support.

The mission of the Center for Research on the Education of Students Placed At Risk (CRESPAR) is to conduct the research, development, evaluation, and dissemination needed to transform schooling for students placed at risk. The work of the Center is guided by three central themes — ensuring the success of all students at key development points, building on students' personal and cultural assets, and scaling up effective programs — and conducted through seven research and development programs and a program of institutional activities.

CRESPAR is organized as a partnership of Johns Hopkins University and Howard University, in collaboration with researchers at the University of California at Santa Barbara, University of California at Los Angeles, University of Chicago, Manpower Demonstration Research Corporation, University of Memphis, Haskell Indian Nations University, and University of Houston-Clear Lake.

CRESPAR is supported by the National Institute on the Education of At-Risk Students (At-Risk Institute), one of five institutes created by the Educational Research, Development, Dissemination and Improvement Act of 1994 and located within the Office of Educational Research and Improvement (OERI) at the U.S. Department of Education. The At-Risk Institute supports a range of research and development activities designed to improve the education of students at risk of educational failure because of limited English proficiency, poverty, race, geographic location, or economic disadvantage.

Abstract

This report provides background, implementation, and diverse outcome data from the first three years of an ongoing effort to implement a highly specified school reform design in a high-poverty, urban elementary school. The design that is being implemented is the Calvert School model, and that model is described in this report. Third-year implementation was largely, though not totally, successful. Outcome data indicate that the Calvert program has had a positive academic impact on students attending Woodson Elementary School.

Acknowledgments

The authors wish to thank Dr. Susan Spath, Principal, and the faculty of Woodson Elementary School. Without their cooperation, the research reported here would not have been possible. We would also like to thank Ms. Sita Culman and The Abell Foundation for their generous support of this longitudinal effort.

Introduction

The two largest U.S. multi-year, outcome-reporting studies of deliberate school change efforts of the last 20 years have both concluded that the local implementation/adaptation of externally developed programs have tended to have greater impacts on student achievements than have locally developed programs (Crandall et al., 1982; Stringfield et al., 1997). Further, both the Follow-Through evaluations (Stallings & Kaskowitz, 1974) and the evaluations of Success for All (Slavin et al., 1996) have tended to indicate that, in the words of Rose (1995), "Combine high standards with structure and you get ... reform that works." If these findings and assertions are correct, the careful introduction of a highly specified, high-content design into an inner-city elementary school should produce substantial academic gains.

This technical report provides data from a three-year case study of such an experiment. The report describes the Calvert School program, the Woodson Elementary School in which the program was implemented, and the process of implementation. It then provides detailed outcome data that include attendance, scores on norm-referenced tests, and scores on the Maryland School Performance Assessment Program (MSPAP).

Calvert School

Calvert is a private elementary school with a long history of providing a high-quality education to several generations of children from many of Baltimore's most affluent families. Begun in 1897, the school now educates 390 children from prekindergarten through grade six in its day school. (Another 16,000 children worldwide are home-schooled using Calvert's highly structured home instruction program.) Tuition at Calvert School averages over $9,000 per year.

Calvert carefully selects students for admittance to its day school from children who perform well on an aptitude test and in an interview. During the 1996-1997 school year, 90% of the students attending Calvert were White, 6% were African-American, and 4% were Asian or Hispanic. Fifteen percent of Calvert's students receive partial to nearly full financial assistance.

A coherent philosophy of education pervades Calvert. High expectations, time-on-task, rapid pace of instruction, frequent evaluations, immediate feedback, and student accuracy are all viewed as fundamental. The students are required to learn attention to detail, including correct spelling and punctuation. Parents receive monthly report cards and

representative samples of the student's academic work for the month. In a practice that predated "portfolio assessment" by over half a century, Calvert produces a "book" of each student's nine monthly "folders" of work and presents the book to the student at the end of each year.

Many observers might characterize the Calvert curriculum as "traditional," however, the label would be superficial. Early grades' reading instruction focuses of getting meaning out of reading. The school formally teaches sight words and phonemic skills. Students are taught to read for specific purposes, and there is also time during each school day for reading for enjoyment. Students make frequent use of mathematics manipulatives and do timed fact drills on basic mathematics facts. Calvert has always taught much of the history, literature, geography, science, art, art history, and music that comprise E.D. Hirsch's (1987, 1996) Core Knowledge curriculum.

Woodson Elementary School

Carter G. Woodson Elementary School is located in a predominantly African-American community near, but separated by water from Baltimore's central business district. Over 90% of Woodson students are eligible for free or reduced-price lunch. This percentage is nearly triple the 1996 Maryland state average (31.1%) and well above the Baltimore City average of 70.4%. In the early 1990s, the school had a stable record of low student achievement.

A Brief History of the Calvert Program in the Baltimore City Schools

The idea to put the curriculum of the Calvert School, a private Baltimore elementary school, into urban public schools began nearly 20 years ago. Muriel Berkeley (now director of the Baltimore Curriculum Project) met with a "Cities in Schools" representative who had moved to Washington, D.C. to work in the Carter administration. During their discussions the man volunteered that his children were being home-schooled with the Calvert School Home Instruction Course. The two talked about the merits of the Calvert education, and the man suggested to Dr. Berkeley that the use of the Calvert curriculum could increase the academic achievement of students in urban public schools. Dr. Berkeley contacted William Kirk, then the Head Master of the Calvert School, to see if Calvert would be amenable to

such an experiment. Mr. Kirk communicated the school's willingness to discuss participation in the proposed reform.

Representatives from the Washington, D.C. school district and the representative of Cities in Schools met with Calvert officials. It was eventually decided that the Calvert curriculum was not appropriate for the D.C. schools. A regulation existed at the time in that district that prohibited students from using materials that were part of the curriculum of a lower grade. This was incompatible with the Calvert philosophy that children should receive instruction at their achievement level, not their grade level.

At the same time, Dr. Berkeley suggested the use of the Calvert curriculum to three Baltimore principals, Kathy Pope Smith of Federal Hill Elementary, Gertrude Williams of Barclay Elementary and Middle School, and Evelyn Beasley of Roland Park Elementary and Middle School. Dr. Berkeley and the principals visited Calvert and met with Mr. Kirk. However, concrete plans to place the Calvert Program in a Baltimore City school would wait for nearly three years.

In 1983, Mrs. Smith of Federal Hill Elementary renewed her interest in Calvert. She met twice with Merrill T. Hall, III, the new Calvert Head Master. The discussions at these meetings led to Mrs. Smith submitting a proposal to the Baltimore Fund for Educational Excellence to finance the implementation of the Calvert Program at her school. The Fund approved her proposal. However, Mrs. Smith was met with firm resistance from the then-superintendent of Baltimore City Public Schools. The superintendent forbade the use of the Calvert curriculum in any city public school, based on her belief that the city's curriculum was superior. The school district put an end to Mrs. Smith's plan to bring Calvert to Federal Hill.

Five years later, in 1988, senior-level representatives of The Abell Foundation in Baltimore visited Calvert to learn about the school's educational philosophy and program. After one visit to Calvert, the foundation's president asked Mr. Hall if the Calvert School would be willing to participate in an experiment in which the Calvert curriculum would be placed in a Baltimore public school. Mr. Hall found the concept provocative and proposed the idea to the Calvert Board of Directors. The board approved the concept.

Abell contacted Mrs. Williams, principal of Barclay (Mrs. Smith had died in the intervening years), to gauge her interest in participating in the experiment. She readily agreed. Extended discussions with the new Baltimore City Schools Superintendent and the School Board followed, and the process eventually resulted in Board approval of the project. Nearly 10 years following the genesis of the idea to place the private school curriculum of Calvert School into an urban public school, the elements necessary to effect the reform were

in place. The Calvert School provided the program, The Abell Foundation provided the funding, Barclay Elementary and Middle School provided the school for experimentation, and the Baltimore City Public Schools consented to the project. In September 1989 the first cohort of Barclay students began using the Calvert curriculum (Edmunds, 1993; Rose, 1995).

After evaluators reported four consecutive years of positive results in student achievement at Barclay (see Stringfield, 1995), Abell and Calvert decided to expand to one additional Baltimore City public school. The goal was to verify that the success experienced at Barclay could be replicated.

Concurrently, Susan Spath, principal of Carter G. Woodson Elementary, a Baltimore public school, began to pursue the possibility of using the Calvert curriculum in her school after reading of the success of the reform at Barclay. Dr. Spath's and Calvert's parallel interests blended and Woodson was selected as the second school to implement the Calvert curriculum. In the summer of 1994 the first group of Woodson teachers and assistants received training in the Calvert curriculum and processes, and in September 1994 the first cohort of Woodson kindergarten and first-grade students began receiving instruction using Calvert methods and materials.

Evaluation Methods

The multi-year, multi-method evaluation of the implementation of the Calvert curriculum at Woodson is similar in design to the evaluation conducted at Barclay. As at Barclay, implementation began with kindergarten and first grade, then added a grade every year as the initial cohort progressed. This gradual phasing-in has provided a low-cost, well-matched control group of the next older Woodson-pre-Calvert cohort of students in the same school. As at Barclay, this older cohort includes neighbors and often brothers and sisters of the students in the Woodson-Calvert cohorts.

Data have included background information on all students (e.g., 100% African American, 90% free or reduced-price lunch), district and Abell grant budget information, and data on the school before the Woodson-Calvert Program began. Process data include extensive classroom observations in Woodson-Calvert classes (grade 1 during 1994-95, grades 1 and 2 during 1995-96, and grades 1, 2, and 3 during 1996-97), and in Woodson-not-yet-Calvert classes (grades 2 through 5 in 1994-95). Observations of training sessions and interviews with teachers, the principal of Woodson, the Head Master of Calvert, and representatives of The Abell Foundation have all been valuable components of the design.

The third-year Woodson-Calvert evaluation relied on detailed observations plus a series of outcome measures: student attendance, rates of referrals to special education programs, scores on the performance based Maryland School Performance Assessment Program (MSPAP), and scores from a norm-referenced test, the Comprehensive Testing Program III (Educational Testing Service, 1994), locally referred to as the ERB because it was developed for the Education Records Bureau. The ERB is a norm-referenced test developed for use in private schools. At Barclay the ERB provided data generally comparable to, but often slightly lower than, data provided by the Comprehensive Test of Basic Skills (CTBS/4) (CTB, 1990). During the first year of implementation at Woodson, the results of the CTBS/4 were used in the evaluation of the effectiveness of the Calvert Program. However, those data are no longer gathered because the state and the district discontinued administration of that test.

Implementation

This report documents the third year of the Calvert Program at Woodson Elementary. More detailed information about Woodson Elementary, the Calvert School, the Calvert Program, and the first two years of implementation at Woodson may be found in the first- and second-year evaluation reports (Stringfield & McHugh, 1995, 1996) and in McHugh and Spath (1997).

Implementation at Woodson has been modeled on the Barclay experiment. As at Barclay, the implementation is proceeding incrementally. During the first year, the Woodson kindergarten and first grade were brought into the program; in year two, the second grade was added; in year three, the third grade was added. As of the third year, seven teachers were participating — one in kindergarten, two in first grade, two in second grade, and two in third grade. One grade per year is scheduled to be incorporated into the program until all six grades are using the Calvert curriculum during the 1999-2000 school year.

Peg Licht, who had experience teaching in Baltimore City Public Schools and at Calvert and who had been the full-time coordinator of the Calvert Program at Barclay School from 1990 through June 1994, became the full-time Calvert facilitator at Woodson in September 1994. In this role she has overseen the day-to-day, on-site implementation of the program. She monitors, assists, coaches, models, and teaches. She ensures faithful replication of the Calvert curriculum and methods. She is simultaneously a coach, cheerleader, and watchdog. She has been an invaluable, fundamental, and vital component of the implementation.

A Guiding Committee is overseeing the implementation of the Calvert program at Woodson. The committee is chaired by Ms. Culman of the Abell Foundation and includes Mr. Hall and Sally Carr (Assistant Head) of Calvert, Dr. Spath, Ms. Licht, and Nancy Bethke, Woodson's reading and math intervention teacher. The group meets every four to six weeks to discuss the progress and the problems of the reform.

During the summer of 1996 the Woodson third-grade teachers and assistants attended a two-week training at Calvert School. The Woodson participants learned specifics about scheduling, weekly homework sheets, monthly report cards, parent conferences, and the particular written formats required in all student work. They were taught how to write in Calvert script and how to instruct in composition and spelling. Woodson teachers reviewed lessons in the Calvert correspondence program. Additionally, they learned the Calvert approach to literature, math and math manipulatives, athletics, poetry, science, spelling, and fine arts appreciation. In this summer training, developed and led by Ms. Licht, some of the presentations were made by the Calvert Head Master, Assistant Head, and teachers at Calvert and other schools.

Third-year implementation of specific components of the Calvert Program — the corrections period, weekly homework sheets, composition instruction, folders, and instruction in spelling, science, reading, and mathematics — are discussed in the following sections.

Corrections Period. Students in the Calvert Program use the 30 minutes prior to the first instructional period as a time to correct previous work, complete unfinished work, perfect folder papers, read independently, or do other instructionally related tasks. Common activities during this period are correcting spelling tests or dictations, finalizing compositions, catching up on incomplete work or work missed during an absence, or reading for pleasure. An adaptation that Calvert made at Woodson, as had been made at Barclay, was the daily assignment of specific Reading Work Pages (a supplement to the reading program) during the pre-school period.

During the 1996-97 school year, five of the six Woodson teachers implemented the modified corrections period. The sixth teacher abandoned the Calvert design and instead assigned journal writing each morning. The only time she used the period as it had been designed was on Monday, when she had students correct errors they had made on the previous Friday's spelling test. She continued these practices for most of the year until the Guiding Committee insisted that she conform to the design.

During the research group's on-site observations, the most-often observed activity in grades one and two was the completion of Reading Work Pages. Roughly 40% of the first graders and 60% of the second graders were working on these reading worksheets. In third grade, the three activities which predominated were journal writing, spelling, and completion of unfinished work, each at about 20% of students observed. On-task rates during the corrections period averaged 70% across the three grades. Generally, an 80% on-task rate is associated with high achievement gains (Stallings, 1980).

During the corrections period, the teacher and assistant are to be interacting with students or parents, not doing paperwork. During observations, teachers spent one-third of their time working one-on-one with students, 13% talking with parents, and 13% walking around the classroom, checking on the work of the children. Seventeen percent of their time was spent on paperwork. The assistants spent 65% of their time with students of which 45% was spent working with individual children, 10% leading the journal writing activity, and 10% monitoring the work of the entire class. They talked with parents less often than teachers did — 3% of their time. Another 32% of their time was spent preparing supplies and papers for the day and monitoring students in the halls.

In some classes, most often in first grade, parents and grandparents helped during the corrections period. They took down chairs, helped children with their coats and supplies, and listened to students read. They appeared to know many of the children, and they helped children other than members of their own family. In addition, the resource teacher assigned to the most academically needy students went to the homerooms of her students to check on their progress during the pre-school period.

In general, Woodson exhibited solid implementation during the corrections period. It was an informal, yet productive, time. Teachers and assistants spent a large percentage of time working with and monitoring the progress of students. Parents and grandparents were welcome, and they made a contribution. If parents had questions or concerns, they were accommodated. The only area of concern was the off-task rate, which was somewhat higher than desired.

Weekly Homework Sheet. On Monday morning of each week, the Calvert model calls for the homeroom teachers to distribute to each student a sheet listing the homework assignments for the entire week. This is part of school-parent communications. The parents are to see that the children do their homework and are to help their children study spelling words.

The teachers in grades one through three did, in fact, prepare and send home on Monday the homework assignments for the entire week. The first- and second-grade teachers

prepared a more comprehensive package by including worksheets for math practice and, in the case of grade one, copies of the week's spelling list and the dictation were sent home.

Folders. Every month, Calvert students must compile specified work from the previous four weeks for inclusion in the monthly folder. The folder is considered a presentation piece and contains the weekly compositions, the weekly spelling tests, and representative samples of work in reading, mathematics, science, history, and geography. All work must be error free. The folders are sent home at the end of the month and are a part of school-parent communications. Before the folders go home, an adult reviews each child's work with the child.

The Woodson teachers have done a good job of coordinating the compilation of error-free papers. One problem that remains, however, is how to review each folder each month. Spending only five minutes with each child would require over two hours each month in each classroom. Woodson has experimented with several options, but a completely satisfying solution has proven elusive.

Spelling Instruction. Students in the Calvert Program receive spelling instruction each week, although the time spent, types of lessons, materials used, and instructional period used vary by grade. In the early grades, spelling, composition, dictation, and writing practice are taught as a unit. There is much spillover between the subjects. For example, the spelling words introduced on Monday may be used as the basis for the weekly composition, the dictation, or the practice of writing in Calvert script. A spelling test is given to all students on Friday and is included in the monthly folder after corrections have been completed. In the upper grades, spelling may be incorporated more into reading, and a Calvert workbook, titled Vocabulary Connections, may be used in conjunction with the current reading material. Weekly spelling tests are also given to students in the upper grades.

In each class in each grade, spelling was taught as specified in the Calvert Program. New spelling words were given on Monday and tested on Friday. Appropriate exercises were conducted throughout the week. Students corrected test errors on Monday, and the corrected spelling tests were added to the monthly folder papers.

Composition Instruction. Beginning in January of first grade, all students in the Calvert Program write a composition each week. Typically, on Monday, the topic is introduced and discussed. On Tuesday, the class writes a composition together — children suggest sentences and the class decides which are the best. On Wednesday, the students must write a composition on their own. By Thursday morning, each teacher must have reviewed each child's work, marking all mistakes, because the Thursday morning corrections period is used by the students to rewrite their compositions. By Friday morning, each teacher must

again have reviewed all work. Further corrections to the compositions are made by the students during the Friday morning corrections period. Each composition is included in the monthly folder. All final compositions must be error-free.

At Woodson, all students in the Calvert Program did, in fact, write a composition each week. In some classrooms the days on which specific steps in the writing process were conducted differed from the days specified by Calvert, but the deviation was not disruptive.

Three concerns arose regarding composition instruction. In one classroom the compositions were almost identical. This is implausible if students were writing their own compositions. Second, one educator noted that third-grade students made errors that they should not be making (such as no capital at the beginning of a sentence) on MSPAP. Perhaps students were relying too much on teachers to correct punctuation and grammar mistakes during composition instruction, and an adaptation in the writing process should be identified and implemented. Third, the language of instruction and the types of compositions and topics do not correspond with MSPAP. Only minor modifications would be needed to fit the current composition instruction into MSPAP requirements and expectations.

Science Instruction. In the third year of implementation, Woodson planned to adapt the Calvert science curriculum to incorporate the processes and outcomes which are tested on MSPAP. Teachers were required to write new science lessons with MSPAP in mind. They were to do so by using the Calvert science textbooks and some of the units of Science: Thinking, Application, and Research Skills (STARS; Baltimore City Schools, 1991).

The initiative was planned and begun in the summer of 1996 by Ms. Bethke and Vanessa Merrick, a special education teacher. These two teachers wrote sample MSPAP-like questions for all grade levels from first through sixth and made vocabulary lists and outlined the MSPAP skills covered in the science text in grades one through three. They purchased and organized the required materials. An in-service in September led by Ms. Bethke introduced all Woodson teachers to the structure, rationale, and requirements of the STARS program. However, implementation was inconsistent.

Reading and Mathematics Instruction. Students in the Calvert Program receive reading and mathematics instruction every day. The content of any one day's lesson, of course, depends on the grade level and the group. (Calvert groups in reading and mathematics according to performance.) In first through third grade, the reading books typically used are basals, Reading Work Pages, Reading Skill Builder booklets, extra reading books such as Smiling Hill Farm, and rhymes, verses, and stories. The Macmillan (1991) math series is used in all grades.

There are usually four reading and four math groups in each grade. At the allotted instructional time, the students go to their groups. Children are exchanged across classes, but not grades. The teachers and the assistants each teach one group, and instruction normally takes place in separate rooms. At Woodson, this model was followed.

Outcomes

To gauge if the Calvert Program was having a three-year effect on the public school children of Woodson Elementary, the evaluation team gathered data on various indicators. Analyses of data in the areas of student attendance, mobility, referrals to special education, and student achievement test scores are presented below.

Student Attendance — Schoolwide

In the past five years Woodson has aggressively worked to increase attendance by giving rewards to children who attend regularly and by contacting the parents of children who are frequently absent. During the 1996-97 school year, efforts were increased. Every four to six weeks there was a special event, such as a trip to the movies, bowling alley, or skating rink, for children with perfect attendance for a specified period of time. The school continued its previous practice of daily announcements of the classes which had perfect attendance the preceding day and identifying children or classes with perfect attendance in The Woodson Flyer, the principal's weekly newsletter. The attendance monitor or the office secretary called the homes of every child absent each day and made home visits to parents who could not be contacted by telephone. These efforts have had a schoolwide impact. Woodson's 1997 schoolwide attendance rate of 96.4% was among the highest in Baltimore City and merited the state-defined status of "excellent." (In the Maryland School Performance Report, 1997, "excellent" is defined as "a highly challenging and exemplary level of achievement indicating outstanding accomplishment in meeting the needs of students.") The "excellent" level had been obtained in 1994, and "satisfactory" status (at least 94% attendance) was reached in 1993, 1995, and 1996.

Beyond meeting the state goal of "excellent," Woodson's ability to sustain high attendance rates is important because recent studies suggest that increased attendance has a positive influence on student performance (Caldas, 1993; Lamdin, 1996). The 1997 Woodson attendance rate of 96.7% was well above the 1997 Baltimore City elementary

school average of 93.3%. These differences translate into six extra days of schooling each year for the Woodson students.

Student Attendance — Woodson-Calvert Cohorts

As can be seen in Table 1, there is very little difference between the attendance rates of the pre-Calvert cohort and the three Woodson-Calvert cohorts. In six of seven within-grade comparisons, those slight differences favor the Woodson-Calvert cohorts over the pre-Calvert cohort.

Table 1
Mean *attendance rates* for first, second, and third Woodson-Calvert cohorts and pre-Calvert cohort; first-, second-, and third-grade data.

Cohort	Grade 1	Grade 2	Grade 3
Third Woodson-Calvert	97.1%	---	---
Second Woodson-Calvert	95.4%	96.8%	---
First Woodson-Calvert	94.2%	95.3%	97.0%
Pre-Calvert Cohort	95.2%	94.5%	95.4%

Results from Norm-Referenced Achievement Tests

As groundwork for the implementation of the Calvert Program at Woodson, the Calvert staff administered the Comprehensive Testing Program III test (locally referred to as the ERB) to Woodson students from the second through the fifth grade in the fall of 1994. In the springs of 1995, 1996, and 1997 Calvert tested students in grades one through five, again using the ERB. In the Barclay-Calvert experiment, longitudinal ERB results tended to parallel, but be more stable than, CTBS results (Stringfield, 1995). The ERB is a norm-referenced test used by private schools.

The results of the reading comprehension, writing mechanics, and mathematics tests of the ERB are presented separately. All analyses were performed on normal curve equivalents (NCEs)[1] which were converted to percentiles after quantitative analyses had been

[1] Percentiles have the psychometric disadvantage of not forming a normal distribution and therefore being inappropriate for most psychometric analyses. Performing analyses using normal curve equivalents (NCEs) and then converting to percentiles for presentation avoids these psychometric problems. The NCE scale has a mean of 50 and a standard deviation of 21.06. NCE scores are identical to the percentile distribution at the values of 1, 50, and 99.

completed. To be included in the data analysis for this report, the third-cohort students (first grade during the 1996-97 school year) must have been in first grade at Woodson continuously since September 30, 1996, and the first-cohort, second-cohort, and the pre-Calvert students must have been students at Woodson during each applicable test administration. For those students eligible to be included in the data analysis who were absent during one of the ERB subtests, the evaluators interpolated a score based on the average of their scores on the same subtest from other years. The grade-one data for the pre-Calvert cohort is from an ERB test administered to those students early in the fall of grade two (the earliest data available).

Table 2
Mean ERB *Reading Comprehension* national percentiles for Woodson's pre-Calvert and Calvert cohorts, spring 1994-spring 1997.

Grade	Cohort	*(n)*	Mean Percentile	$\bar{x}$ NCE	*SD*	Effect Size
1	Pre-Calvert	(18)	18	30.4	*6.7*	
	First Woodson-Calvert	(32)	49	49.5	*16.5*	+2.8
	Second Woodson-Calvert	(29)	40	44.6	*18.0*	+2.1
	Third Woodson-Calvert	(50)	49	49.6	*29.0*	+2.9
2	Pre-Calvert	(18)	22	33.8	*10.6*	
	First Woodson-Calvert	(32)	48	49.0	*20.6*	+1.4
	Second Woodson-Calvert	(29)	71	61.7	*22.6*	+2.6
3	Pre-Calvert	(18)	25	35.7	*8.2*	
	First Woodson-Calvert	(32)	46	47.8	*18.7*	+1.5

ERB Reading Comprehension Results. The reading comprehension subtest of the ERB tests students' skills in vocabulary, recognizing explicit information, identifying explicit main ideas, analyzing, hypothesizing, and summarizing. As can be seen in Table 2, each Woodson-Calvert cohort, on average, has achieved substantially higher scores on the ERB Reading Comprehension test than the pre-Calvert cohort. In grade one, the Woodson-Calvert cohorts' average national percentile scores of 49, 40, and 49 were from 22 to 31 percentiles higher than the last pre-Calvert cohort's mean score of 18th percentile.

The right-hand column presents effect size computations. The computation is as follows: (Calvert mean NCE – Pre-Calvert mean NCE/Pre-Calvert Standard Deviation. An effect size larger than +.5 is usually considered large. The Calvert effect sizes for Reading Comprehension in grades 1-3 ranged from 1.4 to 2.9 and were quite large. The second-grade

data show an even wider range. The Woodson-Calvert students scored an average of 26 to 49 percentiles higher than the pre-Calvert students mean score of 22nd percentile. The third-grade scores show a mean 21 percentile gap between the first Woodson-Calvert and the pre-Calvert students.

ERB Reading Comprehension Results Expressed in Quartiles. The percentage of students scoring in each quartile in reading is shown in Tables 3, 4, and 5. The difference between the pre-Calvert cohort and the first two Woodson-Calvert cohorts is dramatic. In grade one, 72% of the pre-Calvert students scored in the lowest quartile, as compared to 16%, 35%, and 6% of the Woodson-Calvert students. No pre-Calvert first-grade student scored above the second quartile, while 47%, 24%, and 42% of the first three Woodson-Calvert cohorts did. Grade two reading scores show similar disparities in the reading achievement levels of the students. While the pre-Calvert cohort made gains in the second grade, 44% still scored in the lowest quartile and only 6% scored in the third quartile. By contrast, 44% of the first Woodson-Calvert cohort and 76% of the second Woodson-Calvert scored in the upper two quartiles in reading in grade two.

Table 3

Percentage (and *ns*) of Woodson *first-grade* students, by cohort, scoring in each quartile of the ERB *Reading Comprehension* test.

Cohort	Quartile							
	Lowest		Second		Third		Highest	
Pre-Calvert	72%	(13)	28%	(5)				
First Woodson-Calvert	16%	(5)	37%	(12)	28%	(9)	19%	(6)
Second Woodson-Calvert	35%	(10)	41%	(12)	14%	(4)	10%	(3)
Third Woodson-Calvert	6%	(3)	52%	(26)	24%	(12)	18%	(9)

Table 4

Percentage (and *ns*) of Woodson *second-grade* students, by cohort, scoring in each quartile of the ERB *Reading Comprehension* test.

Cohort	Quartile							
	Lowest		Second		Third		Highest	
Pre-Calvert	44%	(8)	50%	(9)	6%	(1)		
First Woodson-Calvert	22%	(7)	35%	(11)	25%	(8)	19%	(6)
Second Woodson-Calvert	7%	(2)	17%	(5)	62%	(18)	14%	(4)

Table 5

Percentage (and *ns*) of Woodson *third-grade* students, by cohort, scoring in each quartile of the ERB *Reading Comprehension* test.

Cohort	Quartile			
	Lowest	Second	Third	Highest
Pre-Calvert	33% (6)	61% (11)	6% (1)	
First Woodson-Calvert	25% (8)	37% (12)	16% (5)	22% (7)

Grade three results reveal gains for the pre-Calvert cohort and a decline for the first Woodson-Calvert cohort, compared to first- and second-grade results, but only 6% of pre-Calvert students scored in the third or highest quartile while 38% of the first Woodson-Calvert cohort did.

ERB Writing Mechanics Results. The ERB writing mechanics subtest is administered for the first time in grade two. It is designed to measure students' understanding of writing conventions, such as punctuation, capitalization, spelling, and appropriate use of language. Data in Table 6 show that in second grade the pre-Calvert cohort obtained an average writing mechanics score at the 36th percentile. By contrast, the first and second Woodson-Calvert cohorts scored at the 71st and 67th percentiles, respectively. In grade three, the gap between the first cohort and the pre-Calvert cohort had decreased from 31 to 21 percentiles, still a very large difference. All Woodson-Calvert means were above the national average, and the effect sizes were in the 1.9-2.7 range.

Table 6

Mean ERB *Writing Mechanics* national percentiles for Woodson's pre-Calvert and Calvert cohorts, spring 1994-spring 1997.

Grade	Cohort	*(n)*	Mean Percentile	$\bar{x}$ NCE	*SD*	Effect Size
2	Pre-Calvert	*(18)*	36	42.3	*7.1*	
	First Woodson-Calvert	*(32)*	71	61.6	*15.1*	+2.7
	Second Woodson-Calvert	*(29)*	67	59.3	*13.8*	+2.4
3	Pre-Calvert	*(18)*	38	43.9	*6.7*	
	First Woodson-Calvert	*(32)*	59	54.6	*16.7*	+1.9

ERB Writing Mechanics Results Expressed in Quartiles. Scores on the ERB Writing Mechanics test show large differences between the pre-Calvert and Woodson-Calvert cohorts. As seen in Tables 7 and 8, only 11% and 17% of the pre-Calvert students scored in the third quartile in grades two and three, respectively. No pre-Calvert student scored in the highest quartile. In contrast, at 78%, 76%, and 44%, the Woodson-Calvert cohorts scored in the upper two quartiles over grades two and three. Of particular significance are the second-grade scores for the Woodson-Calvert cohorts — 78% of the first Woodson-Calvert cohort and 76% of the second scored at or above the 50th percentile. These are striking outcomes.

Table 7

Percentage (and *ns*) of Woodson *second-grade* students, by cohort, scoring in each quartile of the ERB *Writing Mechanics* test.

Cohort	Quartile			
	Lowest	Second	Third	Highest
Pre-Calvert	22% (4)	67% (12)	11% (2)	
First Woodson-Calvert		22% (7)	44% (14)	34% (11)
Second Woodson-Calvert	7% (2)	17% (5)	38% (11)	38% (11)

Table 8

Percentage (and *ns*) of Woodson *third-grade* students, by cohort, scoring in each quartile of the ERB *Writing Mechanics* test.

Cohort	Quartile			
	Lowest	Second	Third	Highest
Pre-Calvert	5% (1)	78% (14)	17% (3)	
Second Woodson-Calvert	3% (1)	53% (17)	19% (6)	25% (8)

ERB Mathematics Results. The emphasis in the ERB Mathematics subtest is on process and is based on the National Council of Teachers of Mathematics Standards for Curriculum and Evaluation (1989). The ERB mathematics scores are displayed in Table 8. The Woodson-Calvert students' first-grade mathematics scores of 67, 62, and 61 are each at least 27 percentiles higher than the pre-Calvert students' mean percentile score of 34. The

second-grade data are similar. The Woodson-Calvert students scored on average 28 percentiles higher than the pre-Calvert cohort. In third grade the difference between the first Woodson-Calvert cohort and the pre-Calvert cohort decreased, but it remained at a dramatic 21 percentiles. Note that, as with writing mechanics, all Woodson-Calvert ERB mathematics means have been above the national average, and that effect sizes ranged from 1.4 to 2.1, all very large.

Table 9

Mean ERB *Mathematics* national percentiles for Woodson's pre-Calvert and Calvert cohorts, spring 1994-spring 1997.

Grade	Cohort	*(n)*	Mean Percentile	$\bar{x}$ NCE	*SD*	Effect Size
1	Pre-Calvert	(18)	34	41.3	*10.0*	
	First Woodson-Calvert	(32)	61	55.8	*19.4*	1.4
	Second Woodson-Calvert	(29)	62	56.4	*16.5*	1.5
	Third Woodson-Calvert	(50)	67	59.4	*24.9*	1.8
2	Pre-Calvert	(18)	39	44.1	*7.5*	
	First Woodson-Calvert	(32)	68	59.7	*19.9*	2.1
	Second Woodson-Calvert	(29)	66	58.6	*12.3*	1.9
3	Pre-Calvert	(18)	33	40.8	*5.6*	
	First Woodson-Calvert	(32)	54	51.9	*17.6*	2.0

ERB Mathematics Results Expressed in Quartiles. The distinctions seen in the reading comprehension and writing mechanics tests can also be seen in the mathematics scores. Tables 10, 11, and 12 show the percentages of students scoring in each quartile for grades one, two, and three in mathematics. The Woodson-Calvert students scored significantly higher than the pre-Calvert students. No pre-Calvert student scored in the highest quartile in any year while 22% to 36% of Woodson-Calvert cohort students scored in the highest quartile for all grades and years.

Table 10

Percentage (and *n*s) of Woodson *first-grade* students, by cohort, scoring in each quartile of the ERB *Mathematics* test.

Cohort	Quartile			
	Lowest	Second	Third	Highest
Pre-Calvert	28% (5)	61% (11)	11% (2)	
First Woodson-Calvert	6% (2)	38% (12)	34% (11)	22% (7)
Second Woodson-Calvert	3% (1)	41% (12)	28% (8)	28% (8)
Third Woodson-Calvert	14% (7)	38% (19)	12% (6)	36% (18)

Table 11

Percentage (and *n*s) of Woodson *second-grade* students, by cohort, scoring in each quartile of the ERB *Mathematics* test.

Cohort	Quartile			
	Lowest	Second	Third	Highest
Pre-Calvert	11% (4)	67% (12)	22% (2)	
First Woodson-Calvert	3% (1)	38% (7)	28% (14)	31% (11)
Second Woodson-Calvert		17% (5)	59% (11)	24% (11)

Table 12

Percentage (and *n*s) of Woodson *third-grade* students, by cohort, scoring in each quartile of the ERB *Mathematics* test.

Cohort	Quartile			
	Lowest	Second	Third	Highest
Pre-Calvert	22% (4)	72% (13)	6% (1)	
First Woodson-Calvert	3% (1)	62% (20)	13% (4)	22% (7)

ERB Summary

Three years of ERB testing have yielded strikingly similar results — Students involved in the Woodson-Calvert Program are achieving at much higher levels than their

older Woodson-pre-Calvert peers. Third year effect sizes for third grade were all quite large, ranging from 1.5 to 2.0. The effects are consistent with qualitative observational data gathered through the three years at Woodson. The size of the effects resemble second- through fourth-year findings from the Barclay-Calvert project (Stringfield, 1993, 1995). After three years the first Woodson-Calvert group to complete third grade, compared to pre-Calvert students, was achieving at a level that averaged 25 percentiles higher in reading, 21 percentiles higher in mathematics, and 21 percentiles higher in writing mechanics.

MSPAP Results

MSPAP is a "next generation" performance-based testing program. The test is given to all third, fifth, and eighth graders across the state of Maryland. A total of approximately 150,000 students take the test each year (Yen & Ferrara, 1997). MSPAP covers six content areas — reading, writing, language usage, mathematics, science, and social studies. The first four are defined by Yen and Ferrara (1997) as follows:

Reading. The reading domain is defined by three purposes for reading: reading for literary experience, for information, and to perform a task. (p. 62)

Writing. The writing domain is defined by three purposes for writing — to inform, persuade, and express personal ideas — and steps in the writing process — prewriting/planning, drafting, revising, and proofreading. (p. 63)

Language Usage. The single language usage outcome incorporates correctness and completeness features in the appropriate use of English conventions (e.g., punctuation, grammar, spelling) across a variety of writing purposes and styles. (p. 63)

Mathematics. The mathematics domain is defined by nine content outcomes and four process outcomes. The Maryland outcomes are a close adaptation of the widely known NCTM Curriculum and Evaluation Standards for School Mathematics (National Council of Teachers of Mathematics, 1989).... The MSPAP open-ended mathematics tasks require students to solve multistep problems; make decisions and recommendations; communicate their ideas, understanding, and reasoning in mathematics; and explain processes they used to solve problems. (p. 64)

The final two areas are:

Science. The science domain covers the content areas of life science, physical science, and earth/space science and four process outcomes which include interpreting and

explaining information, demonstrating ways of thinking inherent in science, using the processes of science, and applying science to solve problems.

Social Studies The social studies domain encompasses the content areas of political systems, geography, national and world history, and economics and the process outcomes of gathering, interpreting, and explaining information, demonstrating positive self-concept and empathy toward others, and expressing appropriate understanding and attitudes.

The Maryland State Department of Education has resisted efforts by parents, researchers, and others to obtain MSPAP data at the individual student level. Thus, unlike in the ERB analyses, students new to the school could not be separated out. Thirty percent of the third-grade students who took the MSPAP at Woodson during the spring of 1997 transferred into Woodson at some time in second or third grade. Because these students have not received three full years of the Calvert Program, MSPAP becomes a conservative test of the effects of the intervention.

Table 13

Percentage of *third-grade* students scoring at least at the satisfactory level on the six tests of MSPAP.

Cohort (Year of Test)	Reading	Writing	Lan-guage Usage	Math	Social Studies	Science
First Woodson-Calvert (1997)	10.4	20.8	35.4	8.5	4.2	10.4
Pre-Calvert (1996)	11.1	13.3	11.1	0.0	2.2	0.0
Baltimore City (1997)	11.8	14.6	23.2	10.8	9.5	10.7
Maryland (1997)	36.8	40.0	49.5	41.4	35.8	38.2

The results of the 1997 administration of MSPAP for third graders at Woodson, in Baltimore City, and in Maryland are shown in Table 13. Also included are the 1996 third-grade results for the pre-Calvert cohort. In all tests except reading, the first Woodson-Calvert cohort outscored the pre-Calvert students. Although the percentage of students eligible for free lunch is over 20% higher at Woodson than in the city generally, on the writing and language usage tests, the first Woodson-Calvert cohort outscored other Baltimore City students. In no tests did the Woodson children outscore the mean for all Maryland schools.[2]

[2] Recall that the state mean free lunch rate is one-third that of Woodson.

Even though the first cohort outscored their same-school, previous-program peers in all areas except reading, the results of the MSPAP analyses must be examined with caution. While language usage and writing scores indicated substantial advances against previous cohorts and the Baltimore City average, scores in the other areas did not reflect the remarkable gains seen on the ERB. The reading and mathematics results were surprising given the emphasis these subjects receive in the Calvert Program and the ERB scores reported earlier.

Summary

Woodson Elementary School has completed three full years of implementing the Calvert School curricular and instructional program. Third-year results have been very positive for an educational innovation. Level of implementation observed in classrooms, while allowing room for improvement, has been good. The quality of work in students' folders has been high. Given that many of the parents at Woodson are financially unable to provide many of the educational opportunities and resources available to virtually all Calvert students, these are remarkable achievements.

Student attendance is high throughout Woodson Elementary School, averaging 96.4%. Referral rates to special education remain low. End of third-grade ERB scores in reading comprehension, mathematics, and writing mechanics were all dramatically above those of the previous cohort of Woodson students. The Woodson-Calvert students scored between 21 and 49 percentiles higher than the pre-Calvert students on the ERB. These differences are highly educationally significant, with effect sizes ranging from 1.4 to 2.9. The MSPAP scores also indicated growth though rate of growth appeared to be less dramatic than was seen on the ERB. The Woodson-Calvert third-grade students appear to be, on average, much better prepared for success in the fourth grade and above than were their neighborhood peers in Woodson's pre-Calvert cohort.

The clearest conclusion that can be drawn from Woodson Elementary is that the Calvert curricular and instructional program, when implemented with determination and drive, can make a dramatic difference in the educational lives of young, urban children. Taken as a set, the program's clear goals, intensive professional development model, rigorous reading program of phonics and interesting books, traditional rigorous mathematics program, daily focus on writing, and detailed monthly reports to parents, that include multiple writing, spelling, and mathematics products, can produce substantial improvements in student outcomes. These kindergarten through third-grade results leave little doubt that impoverished urban children, given appropriate curriculum and instruction, are capable of achieving at levels that are much higher than current urban averages.

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